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10/028,346	12/20/2001	Meilina Ong Abdullah	15179	3064

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FRANK S. DiGIGLIO  
SCULLY, SCOTT, MURPHY & PRESSER  
400 Garden City Plaza  
Garden City, NY 11530

EXAMINER
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COLLINS, CYNTHIA E

ART UNIT	PAPER NUMBER
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1638

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02/19/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/028,346	<b>Applicant(s)</b> ABDULLAH ET AL.	
	<b>Examiner</b> Cynthia Collins	<b>Art Unit</b> 1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on November 24, 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26, 34-61 and 70-72 is/are pending in the application.
- 4a) Of the above claim(s) 34-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 and 70-72 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The Amendment filed November 24, 2008 has been entered.

Claims 27-33 and 62-69 are cancelled.

Claims 34-61 are withdrawn.

Claims 1-3, 5-9, 12-14, 17-19 and 22-24 are currently amended.

Claims 70-72 are new.

Claims 1-26, 34-61 and 70-72 are pending.

Claims 1-26 and 70-72 are examined.

All previous objections and rejections not set forth below have been withdrawn.

### ***Claim Objections***

Claim 5 is objected to because of the following informalities: Claim 5 as currently amended lacks the article that occurred at the beginning of the previous version of the claim, and there are no markings to indicate an intention to delete the word. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 8 and 18, and claims 2-7, 9-17 and 19-26 dependent thereon, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in

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the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. Claims 1, 8 and 18 as currently amended require an isolated nucleic acid molecule encoding a polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 2 or an amino acid sequence having at least similarity 80% identity to SEQ ID NO: 2. The limitation encoding a polypeptide comprising “an amino acid sequence having at least similarity 80% identity to SEQ ID NO: 2” does not find support in the specification as filed, and thus constitutes new matter.

Applicant maintains that support for the claim amendment can be found in the specification page 18, line 6 (response page 12). This is not persuasive as the specification page 18, line 6 makes no reference to any amino acid sequence; rather, specification page 18, line 6 makes reference to nucleotide sequences.

Claims 1-4, 8-21, 25-26 and 70-72 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated nucleic acid molecule encoding a polypeptide comprising the amino acid sequence as set forth in SEQ ID NO: 2, does not reasonably provide enablement for isolated nucleic acid molecules encoding polypeptides comprising other amino acid sequences. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claims are drawn to an isolated nucleic acid molecule encoding a polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 2 or an amino acid sequence having at least 80% identity to SEQ ID NO: 2, including an isolated nucleic acid molecule that comprises a sequence of nucleotides as set forth in SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form, or a nucleotide sequence having at least about 71% identity to SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form or a nucleotide sequence capable of hybridizing to SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form under low stringency conditions.

The claims are also drawn to a genetic construct comprising an isolated nucleic acid molecule encoding a polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 2 or an amino acid sequence having at least 80% identity to SEQ ID NO: 2, including an isolated nucleic acid molecule that comprises a sequence of nucleotides as set forth in SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form, or a nucleotide sequence having at least about 71% identity to SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form or a nucleotide sequence capable of hybridizing to SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form under low stringency conditions, and including an isolated nucleic acid molecule comprising a sequence of nucleotides as set forth in SEQ ID NO: 1 or SEQ ID NO: 3.

The claims are additionally drawn to a vector comprising said construct, and a host cell comprising said isolated nucleic acid molecules.

The claims are further drawn to an isolated nucleic acid molecule encoding a polypeptide, wherein said nucleic acid molecule comprises a nucleotide sequence having

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at least 85% or 95% identity with SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form.

The claims are also drawn to an isolated nucleic acid molecule encoding a polypeptide, wherein said nucleic acid molecule comprises a nucleotide sequence capable of hybridizing to SEQ ID NO: 1 or SEQ ID NO: 3 or its complementary form under high stringency conditions.

The specification discloses that SEQ ID NOS:1 and 3 are the open reading frame and full length cDNA nucleotide sequences obtained from oil palm (*Elaeis oleifera*) that encode the amino acid sequence of SEQ ID NO:3 (identical to SEQ ID NO:4) (pages 45-46 Example 1; page 49 Example 4; sequence listing). The specification also discloses that the encoded amino acid sequence (SEQ ID NO: 3 or 4) has a predicted 3D structure similar to that of the monomer of a homodimeric human peroxiredoxin, including the D1 domain which contains the thioredoxin fold comprising the active site of the enzyme (Fig. 4; pages 50-51 Example 6). The specification additionally discloses that the encoded amino acid sequence (SEQ ID NO: 3 or 4) also has amino acid sequence homology to plant peroxiredoxins (Fig. 5; page 51 Example 7).

The specification does not disclose other sequences that encode peroxiredoxin polypeptides that are fragments of SEQ ID NO:2, or that are amino acid sequence variants of SEQ ID NO:2. The specification also does not disclose other sequences that encode polypeptides that have another specific function and that are fragments of SEQ ID NO:2, or that are amino acid sequence variants of SEQ ID NO:2. The specification additionally does not disclose how to modify the amino acid sequence of SEQ ID NO:2

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such that its specific peroxiredoxin function would be retained, or such that its peroxiredoxin function would be converted to another specific function.

The full scope of the claimed invention is not enabled because the functional effect of altering an amino acid sequence is unpredictable, since a change in as few as one amino acid in a polypeptide can alter or eliminate its function.

See, for example, Rhoads D.M. et al. (Regulation of the cyanide-resistant alternative oxidase of plant mitochondria. Identification of the cysteine residue involved in alpha-keto acid stimulation and intersubunit disulfide bond formation. J Biol Chem. 1998 Nov 13;273(46):30750-6), who teach that mutation of Cys-128 to Ala in an *Arabidopsis* alternative oxidase caused a pronounced overall increase in enzyme activity relative to the wild-type in the presence or absence of pyruvate (page 30753 Figure 3), whereas a mutation of Cys-78 to Ala in the same *Arabidopsis* alternative oxidase resulted in a minimally active enzyme that showed no response to added pyruvate (page 30753 Figure 3).

See also, for example, Hornung E. et al. (Conversion of cucumber linoleate 13-lipoxygenase to a 9-lipoxygenating species by site-directed mutagenesis. Proc Natl Acad Sci U S A. 1999 Mar 30;96(7):4192-7), who teach that replacement of histidine 608 in a cucumber lipid body lipoxygenase by a less-space-filling valine altered the positional specificity of this linoleate 13-lipoxygenase in favor of 9-lipoxygenation (abstract; page 4195 Fig. 4; page 4196 Table 2; page 4197 Fig. 5).

In the instant case the specification does not provide sufficient guidance with respect to how to alter the amino acid sequence of SEQ ID NO:2 without changing its specific function, or with respect to what other specific activities would be exhibited by

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variants or fragments of SEQ ID NO:2. Absent such guidance one skilled in the art would have to isolate and/or synthesize numerous different sequences encoding variants or fragments of SEQ ID NO:2 that meet the structural limitations set forth in the claims, and then test the polypeptide encoded by each sequence for peroxiredoxin activity in order to discriminate between those sequences that encode polypeptides that function in the same manner as SEQ ID NO:2 and those that do not. Absent such guidance one skilled in the art also would have to determine how to test encoded polypeptides that do not exhibit peroxiredoxin activity in order to ascertain how to use such polypeptides. Such a trial and error approach to practicing the claimed invention would constitute undue experimentation.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 and 8-21 remain rejected, and claims 70-71 are rejected, under 35 U.S.C. 102(b) as being anticipated by Lewis M.L. et al. (FePer 1, a gene encoding an evolutionarily conserved 1-Cys peroxiredoxin in buckwheat (*Fagopyrum esculentum* Moench), is expressed in a seed-specific manner and induced during seed germination. Gene. 2000 Apr 4;246(1-2):81-91, and GenBank Accession No. AF191099, *Fagopyrum esculentum* 1-Cys peroxiredoxin (Per1) mRNA, complete cds., April 24, 2000), for the reasons of record set forth in the office action mailed June 23, 2008.



Applicant's arguments filed November 24, 2008 have been fully considered but they are not persuasive.

Applicant argues that Lewis M.L. et al. do not anticipate the claims as currently amended because Lewis M.L. et al. do not teach a nucleic acid molecule that encodes a protein comprising an amino acid sequence as set forth in SEQ ID NO: 2 or having at least 80% identity with SEQ ID NO: 2, or a nucleic acid molecule comprising a nucleotide sequence having at least 85% or 95% sequence identity with SEQ ID NO: 1 or 3 (reply page 14).

Applicant's arguments are unpersuasive as Lewis M.L. et al. teach a nucleic acid molecule that encodes a protein comprising an amino acid sequence as set forth in SEQ ID NO: 2, e.g. the nucleic acid molecule taught by Lewis M.L. et al. encodes a protein comprising amino acids 1-8 of SEQ ID NO: 2.

Applicant's arguments are also unpersuasive as Lewis M.L. et al. teach a nucleotide sequence having at least 85% or 95% sequence identity with SEQ ID NO: 1 or 3, e.g. the nucleic acid molecule taught by Lewis M.L. et al. comprises nucleotides 1-5 of SEQ ID NO: 1, which sequence has 100% sequence identity with SEQ ID NO: 1.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25-26 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis M.L. et al. (FePer 1, a gene encoding an evolutionarily conserved 1-Cys peroxiredoxin in buckwheat (*Fagopyrum esculentum* Moench), is expressed in a seed-specific manner and induced during seed germination. Gene. 2000 Apr 4;246(1-2):81-91) in view of Lee K.O. et al. (Rice 1Cys-peroxiredoxin over-expressed in transgenic tobacco does not maintain dormancy but enhances antioxidant activity. FEBS Lett. 2000 Dec 8;486(2):103-6) and Parveez G.K.A. et al. (Transgenic oil PALM: production and projection. Biochemical Society Transactions, 2000, 28(6):969-972), for the reasons of record set forth in the office action mailed June 23, 2008.

Applicant's arguments filed November 24, 2008 have been fully considered but they are not persuasive.

Applicant argues that the combined references do not render obvious the claims as currently amended because Lewis M.L. et al. do not teach a nucleic acid molecule that encodes a protein comprising an amino acid sequence as set forth in SEQ ID NO: 2 or having at least 80% identity with SEQ ID NO: 2 (reply page 15).

Applicant's arguments are unpersuasive as Lewis M.L. et al. teach a nucleic acid molecule that encodes a protein comprising an amino acid sequence as set forth in SEQ ID NO: 2, e.g. the nucleic acid molecule taught by Lewis M.L. et al. encodes a protein comprising amino acids 1-8 of SEQ ID NO: 2.

***Remarks***

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Collins whose telephone number is (571) 272-0794. The examiner can normally be reached on Monday-Friday 8:45 AM -5:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cynthia Collins/  
Primary Examiner, Art Unit 1638

CC